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ABSTRACT

This paper is based on information related to the use of computers in special education within California, and on the experiences of the San Juan Unified School District in using computer information for special education research, evaluation and planning. The majority of special education planning agencies in California have some type of computerized management information system (MIS) for special education data, and use county or district office mainframe equipment. Most systems were developed primarily to capture and report student count information required by the state and Federal government. About 15 percent of the agencies use their computer systems to produce special reports for local use. In the San Juan Unified School District, state funds were received to develop a model computerized special education student record database. The district uses a Univac 1100 computer to produce 30 different reports for teachers, administrators, and government agencies. Special requests for information are handled through on-line searchers. This database is also an integral part of San Juan's special education research, evaluation and planning. Areas of study include student achievement, adherence to specified time lines, and selection of research study samples with particular characteristics. (BW)

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Present and Future Computer Application in Special Education Research, Evaluation and Planning

Introduction

This presentation is based on information related to the use of computers in special education within California, and on the experiences of one large California school district in using computer information for special education research, evaluation and planning.

Although research and evaluation departments have used computers to process, store and report student data for many years, there were no special education computer applications in California prior to 1975. Initial developments in this area emerged following the enactment of California's Master Plan for Special Education (1974) and the similar Federal P.L. 94-142 (1975). Large districts or planning agencies used special education funds to create student information systems during the late 1970's. Many smaller agencies did not develop computerized systems until the early 1980's, if at all. The present computer applications of the California special education agencies are summarized in the following section.

Present County and District Computer Practices in California

Special Education Computer Installations

During the 1982-83 school year, in the process of conducting a state-funded research study on the feasibility of using computers in preparing the Individualized Education Programs (IEPs) for special education students, all of the one hundred California special education planning agencies were surveyed. The results of this survey indicate that at least two-thirds of these agencies have some type of computerized management information system (MIS) for special education data.

The majority of special education planning agencies use county or district office mainframe equipment for their student count information. Several directors indicate that either dumb or intelligent terminals are connected to mainframe computers to make data entry and recovery easier. One of the largest areas reported that the individual districts are purchasing terminals to use in accessing the county office mainframe computer.

In only a few cases did program directors indicate that any equipment other than mainframes was used in collecting and recording student information. One of these agencies reported total reliance upon a microcomputer. This agency uses a micro with 128K memory and the director handles the programming herself. Some individual districts within planning agencies purchased microcomputers to use with instructional programs and they also make some use of these units for student records.

Computer Applications

Most of these computerized special education management information systems were developed primarily to capture and report student count information such as that required in various State and Federal government reports. These reports include such types of information as counts of students by handicap, by age, by program placement, and so forth.

About fifteen percent of the California special education agencies use their computer systems to produce a variety of special reports for local use. These reports include lists of student information organized by teacher, counts of students per class/school or within programs, and lists of students requiring annual and three-year reviews. While these reports would not be considered the products of research, the information contained in the computer files has the potential for use in research, evaluation and planning.

Five agencies indicated that they use the computerized systems to maintain files of instructional objectives, including the capability to print student IEPs.

Processing and Reporting Services

During the past five years a number of special education agencies purchased data processing and reporting services from a private company. Nearly all of these agencies have now transfered their files and processing to local equipment. In many cases this transfer was accomplished by purchasing the software package from the company and making local modifications to adapt the packaged system to the local hardware.

Most agencies using mainframes rely upon the data processing departments of their agencies and any programming needs are met by these departments. With the exception of the agencies mentioned above as using similar programs, most agencies have studied programs written by other agencies and then have developed their own adaptations. The changes required from system to system and by various manufacturers have made direct purchase and installation of other agency programs nearly impossible.

The few agencies that are using microcomputers reported the use of a number of packaged software programs, such as Visicalc, Personal Filing System, etc., or of commercially-developed assessment report programs or IEP programs such as the Unistar Report (Microsoft). No agency was using a completely self-programmed microcomputer to report special education information--all relied upon commercial programs.

Local Special Education Computer System for Special Education

Development

In the San Juan district in California, state funds were received to develop a model computerized system to maintain special education student data records. In addition to simplifying the production of reports mandated by federal and state agencies, the system was designed to speed up the transfer of special education student information when students moved from one program, service or school to another.

Equipment

The San Juan district uses a Univac 1100 computer located at the district office with a high speed (1400 lines per minute) printer. The special education files are stored on one of several disk drives. The special education system uses two remote terminals (CRTs). All on-line data processing is done on the CRTs. The terminals are located at two different school sites and are linked with the Univac computer via phone lines. Each terminal has an attached printer for paper copies of any screen display information.

Programs

The special education computer system produces thirty different reports. The reports which are designed help teachers by providing student information include registers, student information slips, class lists, test reports, annual review lists and labels. Special education administrators receive reports, tabulations and student enrollment information to assist them in making decisions regarding such areas as school attendance patterns, student grade levels, staffing ratios and system-wide enrollment projections. The transportation department receives student information listings by bus garage area and bus number or by students' assigned and home schools.

Special requests for information not available from a program are handled through on-line searches. Each year between 75 and 100 special information requests are handled through searches, using a Query software package.

Relationship of Computer Technology to Research, Evaluation and Planning

The computer is an integral part of San Juan's special education research, evaluation and planning. Areas of study which use information from the computer files include student achievement, adherence to specified time lines, selection of research study samples with particular characteristics, and many other tasks. Using a computer data file for any of these purposes requires that the necessary information is part of that file. Many files which other agencies developed and which only produce administrative reports lack the versatility of more extensive files. The San Juan District has been fortunate to have many information elements (350) included in its special education file.

A few examples of research, evaluation and planning activities based upon the computer data base are briefly described in this section.

Achievement

The San Juan district began collecting achievement information on handicapped students in 1977. For several years the focus was limited to learning handicapped students. These students were given the standardized district achievement tests at their functional levels. More recently, achievement information has been collected for deaf and hard-of-hearing students and for speech impaired. This year achievement levels for mildly mentally retarded (TMR) students are being coded on the behavioral objectives provided in their sequenced curriculum.

These various types of achievement information are reported for teachers by class group, and show student scores for one, two or more years. This information helps teachers and program administrators plan appropriate instructional programs for special education students. The achievement information is also used for a number of research and evaluation studies. At this time no other special education agency in California reports using computers to collect specific achievement data on special education students.

Establishing Dates for Required Re-Assessments

Another application of special eduation computer information is to specify the dates at which annual or three-year team meetings and/or assessments are needed. Agencies which use this information may send out lists of students whose review meetings are due in the following month, or may use the dates to trigger the pre-printing of previous IEP information to be used at the next IEP team meeting. Program managers use this information to monitor the compliance of their agency with the required assessments and meetings.

San Juan has found that it can use this type of information for planning if summary reports are prepared by month and year. This information helps plan by showing which months will have the greatest number of referrals or IEP review meetings.

Research studies in San Juan have used this information to compare the time elapsed from referral to IEP meeting with the number of assessments or the severity of handicap.

Future Computer Applications

Equipment

A major change in the use of computer equipment is illustrated by the experience of a large California county. In this county, the equipment for data processing was changed from a regional mainframe computer to an IBM minicomputer. This change came about because of repeated failures in communication and service between the special education staff and the data processing personnel. With the purchase of a minicomputer, the special education staff now deal more directly with the programmers and are able to have the desired reports produced upon request.

Although mainframe equipment was the equipment of choice during the 1970's, there is an increase in the number of agencies which are now use microprocessors. In some cases these microprocessors serve as the terminals for data entry and retrieval from mainframe installations.

Special education administrative or data collection uses for microprocessors are being considered by many small districts. They believe, and rightly, that this would enable them to monitor their own information and make greater use of the information locally. Such applications at present duplicate the information requirements of the planning agencies to which these districts belong. Unless these districts maintain data in the same format and are linked by modems to a major installation, they end up duplicating the information requirements of the planning agencies to which they belong.

Microcompters are now being considered for use by many smaller districts which are acquiring such equipment for instructional or administrative use. To make such data entry most efficient, the larger agency must work with the local districts to provide compatible data entry procedures, to insure computer to computer communication through a modem and any required programming. It seems most feasible to have a standard set of student information requirements

established by the planning agency and to allow local districts to supplement this with additional information for their own use.

Integrated Data Bases

Where integrated student data bases are being developed, there is much concern over the security of data entry (protection of critical areas against change), the confidentiality of the information and access to the information. These concerns can be handled through specific codes for those who have access to data and who are responsible for data entry. Most common is a progressive system for data access. In such a system, school personnel can only access information for students attending their own school, while district personnel have access to information for district students, and planning agencies have access to information for students throughout the agency. Similarly, data entry personnel have codes so that they are the only ones with the right to change information, and only for students at the appropriate level (school/district/agency). Such security measures also need to take into account which data fields can be accessed and by which personnel.

Development of Special Education Student Data Bases

As discussed above, the special education data base in San Juan district was developed as a stand-alone system. A major drawback of the system is that it is not integrated with other district computer files. Initially, this was thought necessary to protect student confidentiality; now it is realized that the district files are, and should be, interdependent. Plans are underway this year to develop a master educational system which will link several related data files into an integrated system. This integrated system will ensure that information used in one file is the same as that needed by other files--for example, student ID numbers, home addresses and phone numbers, special education status for attendance, and achievement and competency test file information.

Unfortunately, planning a master educational system is much more difficult when done after the fact--after many other files have been established--than it would be if done during the initial design phase. Now different files contain similar, but not identical, information with different input source documents and dat entry procedures. Changes in one file do not create corresponding changes in other files. At least ten separate educational computer files are maintained at the present time--census, student name, attendance, achievement testing, competencies, cum grades, course reporting, teacher schedules and special education.

Information Impact of Data Collected

In order for managers to make use of the data stored in computers, much consideration needs to be given to developing a variety of information reports. These reports may contain the information needed for fiscal planning, as well as personnel allocation.

Fiscal and Personnel--The experience of one county agency illustrates a major change in computer applications. This computer application was developed primarily to serve as a management tool. While it provides state and federal count reports, its application is primarily for accounting and billing purposes, linking student services received with the districts funding the staff. Plans include the installation of terminals for data input in all feeder districts.

Planning--Other ways in which program managers can use information include looking at counts of various types of information, such as the number of referrals made to special education, and during which months more referrals are made. Similarly, the months during which meetings are held. and number of students remaining in programs after a number of years, the kinds of services which students are receiving in combination and by handicap.

Evaluation and Research Uses--Such planning uses can become research or evaluation studies when comparisons are made from year to year, and especially which new procedures are implemented. Such studies provide meaningful uses of the information so easily available from computers. If comparison studies are contemplated, a system for maintaining a record from year to year should be implemented. One way for doing this is by preserving a backup tape of the records contained in the data file at a specified time. By maintaining backup records from several strategic dates each year, and holding tape copies for several years, when a special count or record is needed the archival tape can be laid down as though it were the present file and the necessary programs run or queries made.

Student Achievement--The achievement test information which is maintained on special education students forms the basis for much of San Juan's research and evaluation activities. This information, when combined with other information from the data file, is used to monitor program effects, to evaluate areas where changes are being made, and to use in research studies of various types. These applications are some of the most helpful for both program managers and teachers. Yet, in the experience of California districts, these applications are not widespread.

Few agencies now include achievement test information in their special education computer files. Efforts toward this end are underway, but are not adaptable to

research studies. One district which is using a microprocessor, is reporting current testing information as part of the IEP. This information, however, is not stored for later use or aggregation. Another agency is collecting information on the extent to which students are meeting the objectives specified in the IEP document--the annual evaluation of student performance. This information, however, is objective-specific--for example, "student met objective," "student continues to need work on this objective," or "student met 80% of objective"-and is not information which can be used to monitor specific student achievements.

Computer Applications to IEPs

In special education applications, some agencies have found that all or part of the IEP paperwork can double as the document used for data collection. Others use separate documents to collect the needed data. In general, teachers prefer a single process. When the same information must be recorded on two forms, it increases the likelihood of error and compounds teacher resistance to paperwork. Teachers blame the inanimate "computer" for the additional paperwork rather than the program managers who designed the data collection procedures.

The basic MIS information contained in most special education systems may be supplemented by other types of information as considered important by the program managers. Additional information for agencies which produce all or part of the IEP document include: names of service providers, annual goal areas, specific short term objectives, transportation needs, date for next IEP team review meeting, and assessment information.

Special education agencies are anxious to reduce the paperwork required for processing students and preparing IEPs. Much of the opposition found several years ago in California toward computer applications related to IEPs has disappeared. Agencies are now studying ways in which computers can assist in the IEP process, although only a few California agencies are making use of computers.

Special Education Administration

Perhaps the future applications of computer technology will bring some of these exemplary research, evaluation and planning applications into more frequent use in the special education programs within California and throughout the United States.

The impact of computers for special education administrative uses is still considered to be very minor within California. Hopefully this situation will change as more administrators acquire familiarity with the potential contained within these "black boxes."